

In the Claims

A listing of all pending claims is presented below, in which amended claims are preceded by the label (Amended) and claims not amended are labeled (Original). Misnumbered claims 3-9 have been numbered 4-10. Please amend claims 1 and 9 as indicated below.

1. (Amended) A method for increasing the hybridization rate of nucleic acids in a nucleic acid assay, said method comprising:
 - a) attaching probe nucleic acid molecules of known sequence to a solid support that is or is coated with a metal selected from the group consisting of platinum (II), mercury, mercury (II), thallium, cadmium (II), platinum (IV) and palladium (II);
 - b) labeling nucleic acid target molecules with paramagnetic labels;
 - c) attracting said labeled nucleic acid target molecules to the solid support by activating a magnetic field effective to induce rapid migration of said labeled nucleic acid target molecules;
 - d) hybridizing the labeled nucleic acid target molecules with their complementary pairs at a hybridization rate greater than the hybridization rate in the absence of said attracting by said magnetic field;
 - e) washing the support and inverting the polarity of the magnetic field to remove any unbound or nonspecifically bound molecules; and
 - f) detecting the hybridized target nucleic acid molecules.
2. (canceled)

3. (canceled)

4. (Original) A method of claim 1 in which the paramagnetic labels comprise superparamagnetic particles, having a diameter of from about 1 to about 10 nanometers.

5. (Original) A method of claim 1 in which the paramagnetic labels comprise paramagnetic porphyrins.

6. (Original) A method of claim 1 in which the paramagnetic labels are attached to the nucleic acid molecules using cleavable conjugating molecules.

7. (Original) A method of claim 1 in which the nucleic acid molecules are oligonucleotides, genomic DNA, cDNA, RNA or fragments thereof.

8. (Amended) A method of claim 1 in which at least one of said probe nucleic acid molecule and said nucleic acid target molecule is labeled with a fluorescent detection molecule.

9. (Amended) A method for increasing the hybridization rate of nucleic acids in a nucleic acid assay, said method comprising:

- a) attaching nucleic acid target molecules to a solid support that is or is coated with a metal selected from the group consisting of platinum (II), mercury, mercury (II), thallium, cadmium (II), platinum (IV) and palladium (II);
- b) labeling nucleic acid probe molecules of known sequence with paramagnetic labels;
- c) attracting said labeled nucleic acid probe molecules to the solid support by activating a magnetic field effective to induce rapid migration of said labeled nucleic acid probe molecules;
- d) hybridizing the labeled nucleic acid probe molecules with their complementary pairs at a hybridization rate greater than the hybridization rate in the absence of said attracting by said magnetic field;
- e) washing the support and inverting the polarity of the magnetic field to remove any unbound or nonspecifically bound molecules; and
- f) detecting the hybridized probe nucleic acid molecules.

10. (canceled)

11. (canceled)

12. (Original) A method of claim 9 in which the paramagnetic labels comprise superparamagnetic particles, having a diameter of from about 1 to about 10 nanometers.

13. (Original) A method of claim 9 in which the paramagnetic labels comprise paramagnetic porphyrins.

14. (Original) A method of claim 9 in which the paramagnetic labels are attached to the nucleic acid molecules using cleavable conjugating molecules.

15. (Original) A method of claim 9 in which the nucleic acid molecules are oligonucleotides, genomic DNA, cDNA, RNA or fragments thereof.

16. (Amended) A method of claim 9 in which at least one of said probe nucleic acid molecule and said nucleic acid target molecule is labeled with a fluorescent detection molecule.